W02978-Q85

Quanterra
Environmental Services

Quanterra Incorporated
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Earth City, Missouri 63045

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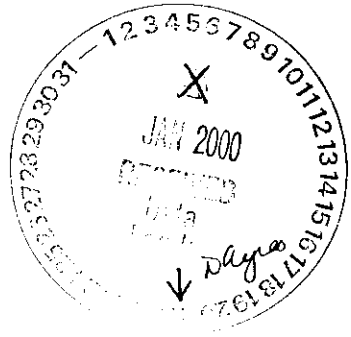
00522.12

CASE NARRATIVE



Bechtel Hanford Incorporated
3350 George Washington Way
Richland, Washington 99352

January 18, 2000

Attention: Joan Kessner

Quote Number	:	33833
SDG	:	W02978
Number of Samples	:	two (2)
Sample Matrix	:	Water
Data Deliverable	:	Summary
Date SDG Closed	:	December 21, 1999

II. Introduction

Between December 16, 1999, and December 21, 1999, two (2) "water" samples were received by Quanterra, Richland and transferred to Quanterra, St. Louis for chemical analysis. The samples were received at the St. Louis lab on 12/17/99 at 4 degrees C and December 23, 1999 at 2 degrees C.. See the attached Sample Summary for a listing of Client Ids and their associated Lab numbers.

III. Analytical Results/ Methodology

The analytical results for this report are presented by analytical test. Each set of data includes sample identification information, analytical results and the appropriate detection limits.

Analyses requested: ICP Metals - 6010 Super Trace - Lead
Mercury - 7471 - CV
PCB - 8082

Deviation from Request: None

IV. Definitions

The following codes are used to denote laboratory quality control samples and can be found in the data summary section of this report:

QCBLK- Quality Control Blank, Method Blank
QCLCS- Quality Control Laboratory Control Sample, Blank Spike
MS- Matrix Spike.
MSD- Matrix Spike Duplicate.

V. Comments

General: The term "Detection Limit" used in the analytical data reports refers to either the lab's standard reporting limits or contractually required reporting limits, whichever is applicable.

Please refer to the attached cross-reference table for the standard preparation methods used at Quanterra, St. Louis.

Metals: A Laboratory Control Sample, Method Blank, Matrix Spike and Matrix Spike Duplicate were analyzed with each preparation batch per the protocol for this analysis.

There were no comments or non-conformances associated with this data.

PCB: A Laboratory Control Sample, Method Blank, Matrix Spike and Matrix Spike Duplicate were analyzed with each preparation batch per the protocol for this analysis.

There were no comments or non-conformances associated with this data.

I certify that this Summary is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Reviewed and approved:

Mark Ward

Marti Ward
St. Louis Project Manager

SAMPLE SUMMARY

F9L210108

WO #	SAMPLE#	CLIENT SAMPLE ID	DATE	TIME
D6MER	001	B0X5V0	12/16/99	11:05

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

SAMPLE SUMMARY

F9L230274

WO #	SAMPLE#	CLIENT SAMPLE ID	DATE	TIME
D6V17	001	B0X633	12/20/99	10:45

NOTE(S) :

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

METHODS SUMMARY

F9L210108

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Mercury in Liquid Waste (Manual Cold-Vapor)	SW846 7470A	SW846 7470A
PCBs by SW-846 8082	SW846 8082	SW846 8082
Trace Inductively Coupled Plasma (ICP) Metals	SW846 6010B	SW846 3010A

References:

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

METHODS SUMMARY

F9L230274

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Mercury in Liquid Waste (Manual Cold-Vapor)	SW846 7470A	SW846 7470A
Trace Inductively Coupled Plasma (ICP) Metals	SW846 6010B	SW846 3010A

References:

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

CLIENT: 127642 BECHTEL HANFORD, INC. QUOTE/SAR #: 33833
PROJECT MANAGER: MARTI WARD LAB ID: F-9L210108-001
PROJECT #: 105-F/DR PHASE3 WORK ORDER: D6MER
REPORT TO: Accounts Payable RECEIVING DATE: 12/16/99
P.O. NUMBER: SAMPLING DATE: 12/16/99
SITE: B00-014 ANALYTICAL DUE DATE: 1/03/00N
AMOUNT REC"D: 500MLP,LG REPORT DUE DATE: 1/06/00
STORAGE LOC: T11A PRIORITY: 13
LOT COMMENTS: Sample has limited volume. SAMPLING TIME: 11:05
MATRIX: WATER RECEIVING TIME: 12:24
SAMPLE ID: B0X5V0
QC PACKAGE: Special Report - see checklist SDG# : W02978
SAMPLE COMMENTS:

Beginning Depth: .00 **Ending Depth:** .00

***** ANALYSIS *****	WRK LOC	REQUEST DATE	EXTRACTION EXP DATE	ANALYSIS EXP DATE
Inductively Coupled Plasma (6010B Trace)	06	12/21/99	0/00/00	6/13/00
METALS, TOTAL - Waters				
MT6010_L PB				
(I-05-QM-01) D6MER Protocol: A QC Program: STANDARD TEST SET				
Mercury (7470A, Cold Vapor) - Liquid	06	12/21/99	0/00/00	1/13/00
METALS, TOTAL (Method exclusive) - Waters				
M7470_L HG				
(I-19-08-01) D6MER Protocol: A QC Program: STANDARD TEST SET				
PCBs (8082)	06	12/21/99	12/23/99	1/31/00
3510C LIQ/LIQ, SEP FUNNEL w/ACID STRIP (PCB) - Nominal				
STL: HANFORD PCB GC:LIST-1(7)				
(I-60-QH-01) D6MER-1-04 Protocol: A QC Program: STANDARD TEST SET				

QUANTERRA INCORPORATED
CLIENT ANALYSIS SUMMARY
Quanterra - St. Louis

Run Date: 12/30/99
Time: 13:19:24
User Id.: SEITHELK

CLIENT: 127642 BECHTEL HANFORD, INC.
PROJECT MANAGER: MARTI WARD
PROJECT #: 105-F/DR PHASE3
REPORT TO: Accounts Payable
P.O. NUMBER:
SITE: B00-014
AMOUNT REC"D: 500MLP,LG
STORAGE LOC: T11A
LOT COMMENTS: Sample has limited volume.
MATRIX: WATER
SAMPLE ID: B0X5V0
QC PACKAGE: Special Report - see checklist
SAMPLE COMMENTS:

QUOTE/SAR #: 33833
LAB ID: F-9L210108-001-D
WORK ORDER: D6MER MSD
RECEIVING DATE: 12/16/99
SAMPLING DATE: 12/16/99
ANALYTICAL DUE DATE: 1/03/00N
REPORT DUE DATE: 1/06/00
PRIORITY: 13
SAMPLING TIME: 11:05
RECEIVING TIME: 12:24

SDG# : W02978

Beginning Depth: .00 **Ending Depth:** .00

***** ANALYSIS *****	WRK LOC	REQUEST DATE	EXTRACTION EXP DATE	ANALYSIS EXP DATE
Inductively Coupled Plasma (6010B Trace) METALS, TOTAL - Waters MT6010_L PB (I-05-QM-01) D6MER Protocol: A QC Program: STANDARD TEST SET	06	12/21/99	0/00/00	6/13/00
Mercury (7470A, Cold Vapor) - Liquid METALS, TOTAL (Method exclusive) - Waters M7470_L HG (I-19-O8-01) D6MER Protocol: A QC Program: STANDARD TEST SET	06	12/21/99	0/00/00	1/13/00
PCBs (8082) 3510C LIQ/LIQ, SEP FUNNEL w/ACID STRIP (PCB) - Nominal STL: HANFORD PCB GC:LIST-1(7) (I-60-QH-01) D6MER-1-06 Protocol: A QC Program: STANDARD TEST SET	06	12/21/99	12/23/99	2/01/00

QUANTERRA INCORPORATED
CLIENT ANALYSIS SUMMARY
Quanterra - St. Louis

Run Date: 12/30/99
Time: 13:19:24
User Id.: SEITHELK

CLIENT: 127642 BECHTEL HANFORD, INC.
PROJECT MANAGER: MARTI WARD
PROJECT #: 105-F/DR PHASE3
REPORT TO: Accounts Payable
P.O. NUMBER:
SITE: B00-014
AMOUNT REC"D: 500MLP,LG
STORAGE LOC: T11A
LOT COMMENTS: Sample has limited volume.
MATRIX: WATER
SAMPLE ID: B0X5V0
QC PACKAGE: Special Report - see checklist
SAMPLE COMMENTS:

QUOTE/SAR #: 33833
LAB ID: F-9L210108-001-S
WORK ORDER: D6MER MS
RECEIVING DATE: 12/16/99
SAMPLING DATE: 12/16/99
ANALYTICAL DUE DATE: 1/03/00N
REPORT DUE DATE: 1/06/00
PRIORITY: 13
SAMPLING TIME: 11:05
RECEIVING TIME: 12:24
SDG# : W02978

Beginning Depth: .00 **Ending Depth:** .00

***** ANALYSIS *****	WRK LOC	REQUEST DATE	EXTRACTION EXP DATE	ANALYSIS EXP DATE
Inductively Coupled Plasma (6010B Trace)	06	12/21/99	0/00/00	6/13/00
METALS, TOTAL - Waters				
MT6010_L PB				
(I-05-QM-01) D6MER Protocol: A QC Program: STANDARD TEST SET				
Mercury (7470A, Cold Vapor) - Liquid	06	12/21/99	0/00/00	1/13/00
METALS, TOTAL (Method exclusive) - Waters				
M7470_L HG				
(I-19-08-01) D6MER Protocol: A QC Program: STANDARD TEST SET				
PCBs (8082)	06	12/21/99	12/23/99	1/31/00
3510C LIQ/LIQ, SEP FUNNEL w/ACID STRIP (PCB) - Nominal				
STL: HANFORD PCB GC:LIST-1(7)				
(I-60-QH-01) D6MER-1-05 Protocol: A QC Program: STANDARD TEST SET				

COA # 0A0961 7

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B00-014-01	Page 1 of 1
Collector: Fahlberg/Nielson W002978	Company Contact: J Adler	Telephone No.: 373-4316	Project Coordinator: TRENT, SJ	Price Code: 7L; Air Quality ☐	Data Turnaround: 21 Days
Project Designation: 105-F/DR Phase III Below-grade Areas Sampling and Analy	Sampling Location: 105 DR		SAF No.: B00-014	
Ice Chest No.: ERC 99.028	Field Logbook No.: EL 1424	COA: R105D2280C	Method of Shipment:	
Shipped To: Quanterra Incorporated	Offsite Property No.:		Bill of Lading/Air Bill No.:	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	HNO3 to pH <2	HNO3 to pH <2	Cooled to 4C	HCl to pH <2	HNO3 to pH <2			
Type of Container	P	P	P	P	aG	P	P			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	20mL	500mL	500mL	500mL	1000mL	1000mL	1000mL			
SAMPLE ANALYSIS	Activity Scan	7196_CR6: Hexavalent Chromium (1)	ICP Metals - 6010A (Supertrace) (Lead), Mercury - 7470 - (CV)	Isotopic Uranium	PCBs - 8082	Technetium-99	See item (1) in Special Instructions.			
Sample No. / Matrix * / Sample Date / Sample Time										
B0X5V0 / Water / 12-16-99 / 1105	X	X	X	X	X	X	X			
			100% full		100% full					

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R. Fahlberg	12.16.99 1145	R. Thoren	12.16.99 1145
R. Thoren	12.16.99 1224	K. Goldsberry	12-16-99 1224
K. Goldsberry	12-16-99 1600	Jason Liemann	12-17-99 0900

SPECIAL INSTRUCTIONS

** The laboratory will use the target detection limits for "Other" matrix materials on all samples associated with this SAF.

(1) Gamma Spectroscopy(Water) {Cobalt-60}; Gamma Spec - Add-on {Barium-133}; Isotopic Plutonium; Strontium-89,90 — Total Sr; Americium-241; Carbon-14; Nickel-63

Only received the two samples circled.

Matrix *
S=Soil
SE=Sediment
SO=Solid
S=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By: Jason Liemann	Title	Date/Time: 12-17-99 0900
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (10/99)

Figure 1

SAMPLE CHECK-IN LIST

Date/Time Received: 12/16/99 1224 SG#: IN02978 JRS 1-04-00

Work Order Number: _____ SAF #: B00-013 | B00-014

Shipping Container ID: ERC99-028 Chain of Custody # _____

1. Custody Seals on shipping container intact? Yes [~~✓~~] No [ ]
2. Custody Seals dated and signed? Yes [~~✓~~] No [ ]
3. Chain-of-Custody record present? Yes [~~✓~~] No [ ]
4. Cooler temperature 4 °C
5. Vermiculite/packing materials is Wet [ ] Dry [~~✓~~]
6. Number of samples in shipping container: 13
7. Sample holding times exceeded? Yes [ ] No [✓]

8. Samples have:
   - ✓ tape
   - ✓ custody seals
   - ____ hazard labels
   - ____ appropriate sample labels

9. Samples are:
   - ✓ in good condition
   - ____ broken
   - ____ leaking
   - ____ have air bubbles

10. Where any anomalies identified in sample receipt? Yes [ ] No [~~✓~~]
11. Description of anomalies (include sample numbers): _____

Sample Custodian/Laboratory: [signature] Date: 12-16-99

Telephoned To: _____ On _____ By _____

Quanterra
Environmental Services

020461

Login No.: F9L2108
W02977

Condition Upon Receipt Variance Report
St. Louis Laboratory

Client: Bechtel Hanford
Date: 12-17-99 Time: 0900
Project No: 33833
Initiated by: Jason Tiemann
Shipper/No: Airborne / 4012571010
RFA/COC Numbers: B00-014-01

Condition/Variance (Check all that apply):

1. ☐ Sample received broken/leaking.
2. ☐ Sample received without proper preservative.
   - ☐ Cooler temperature not within 4-C ± 2-C
     Record temperature: _____
   - ☐ pH _____
   - ☐ other: _____
3. ☐ Sample received in improper container.
4. ☐ Sample received without proper paperwork. Explain: _____
5. ☐ Paperwork received without sample.
6. ☐ No sample ID on sample container.
7. ☐ Custody tape disturbed/broken/missing/not tamper evident type (circle all that apply).
8. ☐ Sample ID on container does not match sample ID on paperwork. Explain: _____
9. ☐ All coolers on airbill not received with shipment.
10. ☐ Other (explain below):

☒ No variances were noted during sample receipt. Cooler Temperature Upon Receipt: 4°

Temperature Variance Does Not Affect the Following Analyses: _____

Notes: Only received the two (2) samples circled on the COC. Other containers retained at Quanterra Richland for analysis

Corrective Action:

☐ Client's Name: _____ Informed verbally on: _____ By: _____

☐ Client's Name: _____ Informed in writing on: _____ By: _____

☐ Sample(s) processed "as is".

☐ Sample(s) on hold until: _____ If released, notify: _____

Comments: _____

Sample Control Supervisor Review: (or designee) Jason Tiemann Date: 12-17-99

Project Management Review: Sheila Laurie Date: 12-22-99

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE

SL-ADMIN-0004, Revised 6/29/99

000013

QUANTERRA INCORPORATED
CLIENT ANALYSIS SUMMARY
Quanterra - St. Louis

Run Date: 1/03/00
Time: 13:55:05
User Id.: SEITHELK

CLIENT: 127642 BECHTEL HANFORD, INC.
PROJECT MANAGER: MARTI WARD
PROJECT #: 105-F/DR PHASE3
REPORT TO: Accounts Payable
P.O. NUMBER:
SITE: B00-014
AMOUNT REC"D: 500MLP
STORAGE LOC: S3D
LOT COMMENTS: Sample has limited volume.
MATRIX: WATER
SAMPLE ID: B0X633
QC PACKAGE: Special Report - see checklist
SAMPLE COMMENTS:
PREP 50ML TO 50ML
Beginning Depth: .00 **Ending Depth:** .00

QUOTE/SAR #: 33833
LAB ID: F-9L230274-001
WORK ORDER: D6V17
RECEIVING DATE: 12/21/99
SAMPLING DATE: 12/20/99
ANALYTICAL DUE DATE: 1/07/00N
REPORT DUE DATE: 1/11/00
PRIORITY: 15
SAMPLING TIME: 10:45
RECEIVING TIME: 9:40
SDG# : W02978

***** ANALYSIS *****	WRK LOC	REQUEST DATE	EXTRACTION EXP DATE	ANALYSIS EXP DATE
Inductively Coupled Plasma (6010B Trace)	06	12/23/99	0/00/00	6/17/00
METALS, TOTAL - Waters				
MT6010_L PB				
(I-05-QM-01) D6V17 Protocol: A QC Program: STANDARD TEST SET				
Mercury (7470A, Cold Vapor) - Liquid	06	12/23/99	0/00/00	1/17/00
METALS, TOTAL (Method exclusive) - Waters				
M7470_L HG				
(I-19-08-01) D6V17 Protocol: A QC Program: STANDARD TEST SET				

QUANTERRA INCORPORATED
CLIENT ANALYSIS SUMMARY
Quanterra - St. Louis

Run Date: 1/03/00
Time: 13:55:05
User Id.: SEITHELK

CLIENT: 127642 BECHTEL HANFORD, INC.
PROJECT MANAGER: MARTI WARD
PROJECT #: 105-F/DR PHASE3
REPORT TO: Accounts Payable
P.O. NUMBER:
SITE: B00-014
AMOUNT REC"D: 500MLP
STORAGE LOC: S3D
LOT COMMENTS: Sample has limited volume.
MATRIX: WATER
SAMPLE ID: B0X633
QC PACKAGE: Special Report - see checklist
SAMPLE COMMENTS:
PREP 50ML TO 50ML
Beginning Depth: .00 **Ending Depth:** .00

QUOTE/SAR #: 33833
LAB ID: F-9L230274-001-D
WORK ORDER: D6V17 MSD
RECEIVING DATE: 12/21/99
SAMPLING DATE: 12/20/99
ANALYTICAL DUE DATE: 1/07/00N
REPORT DUE DATE: 1/11/00
PRIORITY: 15
SAMPLING TIME: 10:45
RECEIVING TIME: 9:40
SDG# : W02978

***** ANALYSIS *****	WRK LOC	REQUEST DATE	EXTRACTION EXP DATE	ANALYSIS EXP DATE
Inductively Coupled Plasma (6010B Trace)	06	12/23/99	0/00/00	6/17/00
METALS, TOTAL - Waters				
MT6010_L PB				
(I-05-QM-01) D6V17 Protocol: A QC Program: STANDARD TEST SET				
Mercury (7470A, Cold Vapor) - Liquid	06	12/23/99	0/00/00	1/17/00
METALS, TOTAL (Method exclusive) - Waters				
M7470_L HG				
(I-19-08-01) D6V17 Protocol: A QC Program: STANDARD TEST SET				

CLIENT: 127642 BECHTEL HANFORD, INC. QUOTE/SAR #: 33833
PROJECT MANAGER: MARTI WARD LAB ID: F-9L230274-001-S
PROJECT #: 105-F/DR PHASE3 WORK ORDER: D6V17 MS
REPORT TO: Accounts Payable RECEIVING DATE: 12/21/99
P.O. NUMBER: SAMPLING DATE: 12/20/99
SITE: B00-014 ANALYTICAL DUE DATE: 1/07/00N
AMOUNT REC"D: 500MLP REPORT DUE DATE: 1/11/00
STORAGE LOC: S3D PRIORITY: 15
LOT COMMENTS: Sample has limited volume. SAMPLING TIME: 10:45
MATRIX: WATER RECEIVING TIME: 9:40
SAMPLE ID: B0X633
QC PACKAGE: Special Report - see checklist SDG# : W02978
SAMPLE COMMENTS:
PREP 50ML TO 50ML
Beginning Depth: .00 **Ending Depth:** .00

***** ANALYSIS *****	WRK LOC	REQUEST DATE	EXTRACTION EXP DATE	ANALYSIS EXP DATE
Inductively Coupled Plasma (6010B Trace)	06	12/23/99	0/00/00	6/17/00
METALS, TOTAL - Waters				
MT6010_L PB				
(I-05-QM-01) D6V17 Protocol: A QC Program: STANDARD TEST SET				
Mercury (7470A, Cold Vapor) - Liquid	06	12/23/99	0/00/00	1/17/00
METALS, TOTAL (Method exclusive) - Waters				
M7470_L HG				
(I-19-08-01) D6V17 Protocol: A QC Program: STANDARD TEST SET				

CUR#020519 2° W-270123

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B00-014-02	Page 1 of 1
Collector: R. Fahlberg W02978	Company Contact: Jason Adler	Telephone No.: 373-4316	Project Coordinator: TRENT, SJ	Price Code: 7L; Air Quality ☐	Data Turnaround: 21 Days
Project Designation: 105-F/DR Phase III Below-grade Areas Sampling and Analy	Sampling Location: 105 DR		SAF No.: B00-014	
Ice Chest No.: SML-452	Field Logbook No.: EL 1424	COA: R105D2280C	Method of Shipment: GOV. Vehicle	
Shipped To: Quanterra Incorporated	Offsite Property No.: N/A		Bill of Lading/Air Bill No.: N/A	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

SDG W02978

Due 1-11-00

SAMPLE ANALYSIS J9L210143

Sample No.	Matrix *	Sample Date	Sample Time	Preservation	HNO3 to pH <2	HNO3 to pH <2								
				Type of Container	P	P								
				No. of Container(s)	1	1								
				Volume	500mL	[redacted]mL								
				ICP Metals - 6010A (Supertrace) (Lead); Mercury - 7470 - (CV)	S[redacted]									
B0X633 D6MT5	Water	12.20.99	1045	X	X		100% FULL	PH=1						
												TIC TO BOX4NS		

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By	Date/Time	Received By	Date/Time
R Fahlberg / R Fahlberg	12.20.99 1650	R Fahlberg / J.C	12.20.99 1650
R. Thoren / J.C	12.21.99 0700	R. Thoren / J.C	12.21.99 0700
R. Thoren	12.21.99 0940	R. Thoren / J. Lafferty	12/21/99 9:40
R. Lafferty	12/21/99 16:00	Jason Luemann	12-23-99 0910

SPECIAL INSTRUCTIONS

** The laboratory will use the target detection limits for "Other" matrix materials on all samples associated with this SAF.

(1) Gamma Spectroscopy(Water) {Cobalt-60}; Gamma Spec - Add-on {Barium-133}; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Americium-241; Carbon-14; Nickel-63

Matrix *
S=Soil
SE=Sediment
SO=Solid
S=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION — Received By: Jason Luemann — Title: — Date/Time: 12-23-99 0910

FINAL SAMPLE DISPOSITION — Disposal Method: — Disposed By: — Date/Time:

BHI-EE-011 (10/99)

Figure 1

SAMPLE CHECK-IN LIST

Date/Time Received: 12/21/99 SG#: W02978

Work Order Number: J9L210143 SAF #: B00-014 / B00-013

Shipping Container ID: SML 452 Chain of Custody # B00-014-02 / B00-013-55, 65, 60, 70, 75

1. Custody Seals on shipping container intact? Yes [✓] No [ ]
2. Custody Seals dated and signed? Yes [✓] No [ ]
3. Chain-of-Custody record present? Yes [✓] No [ ]
4. Cooler temperature 4°
5. Vermiculite/packing materials is Wet [ ] Dry [ ]
6. Number of samples in shipping container: 46
7. Sample holding times exceeded? Yes [ ] No [ ]

8. Samples have:
   - ___ tape
   - ___ custody seals
   - ___ hazard labels
   - ___ appropriate sample labels

9. Samples are:
   - ___ in good condition
   - ___ broken
   - ___ leaking
   - ___ have air bubbles

10. Where any anomalies identified in sample receipt? Yes [ ] No [ ]
11. Description of anomalies (include sample numbers): _____

Sample Custodian/Laboratory: _____ Date: 12-21-99

Telephoned To: _____ On _____ By _____

Quanterra
Environmental Services

020519

Login No.: F9L230274
W02978

Condition Upon Receipt Variance Report
St. Louis Laboratory

Client: Hanford
Date: 12-23-99 Time: 0910
Project No: 33833
Initiated by: Jason Tiemann
Shipper/No: Airborne/4012575 313
RFA/COC Numbers: B00-014-02

Condition/Variance (Check all that apply):

1. ☐ Sample received broken/leaking.
2. ☐ Sample received without proper preservative.
   - ☐ Cooler temperature not within 4°C ± 2°C
     Record temperature: _____
   - ☐ pH _____
   - ☐ other: _____
3. ☐ Sample received in improper container.
4. ☐ Sample received without proper paperwork. Explain: _____
5. ☐ Paperwork received without sample.
6. ☐ No sample ID on sample container.
7. ☐ Custody tape disturbed/broken/missing/not tamper evident type (circle all that apply).
8. ☐ Sample ID on container does not match sample ID on paperwork. Explain: _____
9. ☐ All coolers on airbill not received with shipment.
10. ☐ Other (explain below): _____

☒ **No variances were noted during sample receipt.** **Cooler Temperature Upon Receipt:** 2°

Temperature Variance Does Not Affect the Following Analyses: _____

Notes: _____

Corrective Action:

☐ Client's Name: _____ Informed verbally on: _____ By: _____

☐ Client's Name: _____ Informed in writing on: _____ By: _____

☐ Sample(s) processed "as is". _____

☐ Sample(s) on hold until: _____ If released, notify: _____

Comments:

Sample Control Supervisor Review: Jason Tiemann Date: 12-23-99

Project Management Review: Sheila Fournier Date: 12-28-99

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE

SL-ADMIN-0004, Revised 6/29/99

020519

BECHTEL HANFORD, INC.

Client Sample ID: B0X5V0

~~GC Semivolatiles~~ PCBs DAyes 1/24/2000

Lot-Sample #...: F9L210108-001 Work Order #...: D6MER104 Matrix.....: WATER
Date Sampled...: 12/16/99 Date Received..: 12/16/99
Prep Date.....: 12/22/99 Analysis Date..: 12/23/99
Prep Batch #...: 9356390
Dilution Factor: 2 Method.....: SW846 8082

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Aroclor 1016	ND	2.0	ug/L
Aroclor 1221	ND	2.0	ug/L
Aroclor 1232	ND	2.0	ug/L
Aroclor 1242	ND	2.0	ug/L
Aroclor 1248	ND	2.0	ug/L
Aroclor 1254	ND	2.0	ug/L
Aroclor 1260	ND	2.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	103	(26 - 157)
Decachlorobiphenyl	57	(13 - 147)

BECHTEL HANFORD, INC.

Client Sample ID: B0X5V0

TOTAL Metals

Lot Sample #...: F9L210108-001 Matrix.....: WATER
Date Sampled...: 12/16/99 Date Received..: 12/16/99

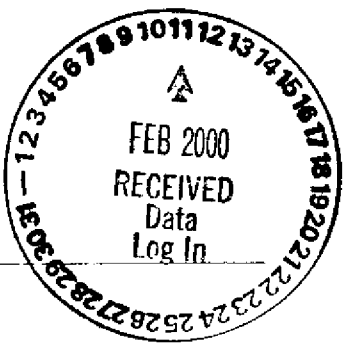
PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0005349						
Lead	ND	3.0	ug/L	SW846 6010B	01/05/00	D6MER101
		Dilution Factor: 1				
Prep Batch #...: 0007365						
Mercury	ND	0.20	ug/L	SW846 7470A	01/06/00	D6MER107
		Dilution Factor: 1				

Quanterra
2800 George Washington Way
Richland, Washington 99352-1613

509 375-3131 Telephone
509 375-5590 Fax

CERTIFICATE OF ANALYSIS

Bechtel Hanford, Inc.
3350 George Washington Way
Richland, WA 99352



February 8, 2000

Attention: Joan Kessner

SAF Number	:	B00-014
Date SDG Closed	:	December 21, 1999
Number of Samples	:	One (1)
Sample Type	:	Water
SDG Number	:	W02978A
Data Deliverable	:	21-Day / Summary

I. Introduction

On December 21, 1999, one water sample was received at the Quanterra Richland Laboratory (QRL) for radiochemical analysis. Upon receipt, the sample was assigned the following laboratory ID number to correspond with the Bechtel Hanford, Inc. (BHI) specific ID:

QRL ID#	BHI ID#	MATRIX	DATE OF RECEIPT
9D6MT510	B0X633	WATER	12/21/99

II. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information, analytical results and the appropriate associated statistical errors.

The requested analyses were:

Gamma Spectroscopy
Gamma Scan by method RICH-RC-5017
Gas Proportional Counting
Total Strontium by method RICH-RC-5006
Alpha Spectroscopy
Plutonium-238, -239/40 by method RICH-RC-5010
Americium-241 by method RICH-RC-5080
Liquid Scintillation Counting
Nickel-63 by method RICH-RC-5069
Carbon-14 by method RICH-RC-5022

III. Quality Control

The analytical results for each analysis performed under SDG W02978A include a minimum of one Laboratory Control Sample (LCS), one method (reagent) blank, and one duplicate sample analysis. Any exceptions have been noted in the "Comments" section.

QC and sample results are reported in the same units.

IV. Comments

Gamma Spectroscopy

Gamma Scan by method RICH-RC-5017:

The achieved MDAs are based on the best available counting geometry and detector efficiency for the matrix analyzed. The data are accepted for reporting with the MDAs achieved. Except as noted, the LCS, batch blank, sample and sample duplicate (B0X633) results are within contractual requirements.

Gas Proportional Counting

Total Strontium by method RICH-RC-5006:

The achieved MDAs do not meet the CRDL for samples B0X633 and B0X633 duplicate analysis due to insufficient sample volume. The data are accepted for reporting with the MDAs achieved. Except as noted, the LCS, batch blank, sample and sample duplicate (B0X633) results are within contractual requirements.

Alpha Spectroscopy

Plutonium-238, -239/40 by method RICH-RC-5010:

The LCS, batch blank, sample and sample duplicate (B0X633) results are within contractual requirements.

Americium-241 by method RICH-RC-5080:

The LCS, batch blank, sample and sample duplicate (B0X633) results are within contractual requirements.

Liquid Scintillation Counting

Nickel-63 by method RICH-RC-5069:

The LCS, batch blank, sample, sample duplicate (B0X633) and sample matrix spike (B0X633) results are within contractual requirements.

Carbon-14 by method RICH-RC-5022:
The achieved MDAs do not meet the CRDL for samples B0X633 and B0X633 duplicate analysis due to insufficient sample volume. The data are accepted for reporting with the MDAs achieved. Except as noted, the LCS, batch blank, sample and sample duplicate (B0X633) results are within contractual requirements.

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager, or a designee as verified by the following signature.

Reviewed and approved:

Jackie Waddell
Project Manager

Quanterra

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02978A/ 9717
LAB SAMPLE ID:	9D0MT510	MATRIX:	WATER
CLIENT ID:	B0X633	DATE RECEIVED:	12/21/99 9:40:00 AM

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
PU-238	0.00E+00	U	0.0E+00	2.4E-01	2.69E-01	pCi/L	92.12%	RICHRC5010
PU239/40	-2.38E-02	U	2.7E-02	2.8E-02	4.95E-01	pCi/L	92.12%	RICHRC5010
AM-241	8.22E-02	U	1.6E-01	1.7E-01	2.23E-01	pCi/L	105.90%	RICHRC5072
BA-133	2.92E+00	U	6.2E+00	6.2E+00	1.14E+01	pCi/L		RICHRC5017
CO-60	2.97E+00	U	5.3E+00	5.3E+00	1.09E+01	pCi/L		RICHRC5017
STRONTIUM	1.43E+00	U	1.8E+00	1.8E+00	3.78E+00	pCi/L	95.80%	RICHRC5006
C-14	5.65E+01	U	4.2E+00	1.1E+02	1.56E+02	pCi/L	100.00%	RICHRC5022
NI-63	1.67E+01		9.4E-01	9.2E+00	1.37E+01	pCi/L	99.97%	RICHRC5069

Number of Results: 8

Quanterra

DUPLICATE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02978A / 9717
LAB SAMPLE ID:	D6MT517R	MATRIX:	WATER
CLIENT ID:	B0X633 DUP	DATE RECEIVED:	12/21/99 9:40:00 A
ORIG LAB SAMPLE ID:	9D6MT510		

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
C-14	-9.46E+00	U	7.2E-01	1.0E+02	1.55E+02	pCi/L	100.00%	RICHRC5022	5.65E+01	280.38%

Number of Results: 1

Result = IDL When Not Detecte

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL.

Quanterra

DUPLICATE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02978A / 9717
LAB SAMPLE ID:	D6MT518R	MATRIX:	WATER
CLIENT ID:	B0X633 DUP	DATE RECEIVED:	12/21/99 9:40:00 A
ORIG LAB SAMPLE ID:	9D6MT510		

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
NI-63	1.53E+01		8.7E-01	9.2E+00	1.39E+01	pCi/L	99.54%	RICHRC5069	1.67E+01	8.85%

Number of Results: 1

Result = IDL When Not Detecte

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL.

Quanterra

DUPLICATE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02978A / 9717
LAB SAMPLE ID:	D6MT519R	MATRIX:	WATER
CLIENT ID:	B0X633 DUP	DATE RECEIVED:	12/21/99 9:40:00 A
ORIG LAB SAMPLE ID:	9D6MT510		

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
PU-238	7.28E-02	U	1.5E-01	1.5E-01	1.97E-01	pCi/L	96.49%	RICHRC5010	0.00E+00	200.00%
PU239/40	7.28E-02	U	1.5E-01	1.5E-01	1.97E-01	pCi/L	96.49%	RICHRC5010	-2.38E-02	394.36%

Number of Results: 2

Quanterra

DUPLICATE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02978A / 9717
LAB SAMPLE ID:	D6MT51AR	MATRIX:	WATER
CLIENT ID:	B0X633 DUP	DATE RECEIVED:	12/21/99 9:40:00 A
ORIG LAB SAMPLE ID:	9D6MT510		

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
AM-241	1.16E-01	U	2.5E-01	2.5E-01	5.07E-01	pCi/L	92.79%	RICHRC5072	8.22E-02	33.96%

Number of Results: 1

Result = IDL When Not Detecte

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL.

Quanterra Analyticall Services, Inc

rptChemRadDup; v3.41

Quanterra

DUPLICATE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02978A / 9717
LAB SAMPLE ID:	D6MT51CR	MATRIX:	WATER
CLIENT ID:	B0X633 DUP	DATE RECEIVED:	12/21/99 9:40:00 A
ORIG LAB SAMPLE ID:	9D6MT510		

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
BA-133	-2.04E+00	U	5.2E+00	5.2E+00	8.72E+00	pCi/L		RICHRC5017	2.92E+00	1125.83%
CO-60	-1.09E-01	U	5.0E+00	5.0E+00	9.59E+00	pCi/L		RICHRC5017	2.97E+00	215.23%

Number of Results: 2

Quanterra

DUPLICATE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02978A / 9717
LAB SAMPLE ID:	D0MT51DR	MATRIX:	WATER
CLIENT ID:	B0X633 DUP	DATE RECEIVED:	12/21/99 9:40:00 A
ORIG LAB SAMPLE ID:	9D6MT510		

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
STRONTIUM	-8.42E-01	U	2.0E+00	2.0E+00	5.00E+00	pCi/L	96.80%	RICHRC5006	1.43E+00	775.46%

Number of Results: 1

Result = IDL When Not Detecte

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL.

Quanterra Analyticall Services, Inc

rptChemRadDup; v3.41

Quanterra

BLANK RESULTS

LAB NAME:	QUANTERRA, Richland	SDG /RPT GRP:	W02978A / 9717
LAB SAMPLE ID:	D71M411X	MATRIX:	WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
C-14	9.35E-01	U	7.0E-02	5.3E+00	7.77E+00	pCi/L	100.00%	RICHRC5022

Number of Results: 1

Quanterra

BLANK RESULTS

LAB NAME:	QUANTERRA, Richland	SDG /RPT GRP:	W02978A / 9717
LAB SAMPLE ID:	D71M811B	MATRIX:	WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
NI-63	4.36E+00		2.4E-01	2.1E+00	3.04E+00	pCi/L	101.61%	RICHRC5069

Number of Results: 1

Result = IDL When Not Detected

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL

Quanterra

BLANK RESULTS

LAB NAME:	QUANTERRA, Richland	SDG /RPT GRP:	W02978A / 9717
LAB SAMPLE ID:	D71M911B	MATRIX:	WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
PU-238	0.00E+00	U	0.0E+00	8.3E-02	9.15E-02	pCi/L	93.32%	RICHRC5010
PU239/40	0.00E+00	U	0.0E+00	8.3E-02	9.15E-02	pCi/L	93.32%	RICHRC5010

Number of Results: 2

Quanterra

BLANK RESULTS

LAB NAME: QUANTERRA, Richland SDG /RPT GRP: W02978A / 9717

LAB SAMPLE ID: D71MC11B MATRIX: WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
AM-241	3.86E-02	U	7.7E-02	7.8E-02	1.05E-01	pCi/L	99.79%	RICHRC5072

Number of Results: 1

Result = IDL When Not Detected

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL

Quanterra

BLANK RESULTS

LAB NAME: QUANTERRA, Richland SDG /RPT GRP: W02978A / 9717

LAB SAMPLE ID: D71MF11B MATRIX: Water

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
BA-133	-2.88E+00	U	5.5E+00	5.5E+00	9.45E+00	pCi/L		RICHRC5017
CO-60	5.96E-01	U	4.8E+00	4.8E+00	9.62E+00	pCi/L		RICHRC5017

Number of Results: 2

Result = IDL When Not Detected

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL

Quanterra

BLANK RESULTS

LAB NAME:	QUANTERRA, Richland	SDG /RPT GRP:	W02978A / 9717
LAB SAMPLE ID:	D71MG11B	MATRIX:	WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
STRONTIUM	9.56E-01	U	1.5E+00	1.5E+00	3.15E+00	pCi/L	97.60%	RICHRC5006

Number of Results: 1

Quanterra

LABORATORY CONTROL SAMPLE

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02978A / 9717
LAB SAMPLE ID:	D71M412S	MATRIX:	WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
C-14	4.19E+01	J	2.3E+00	7.4E+00	7.77E+00	pCi/L	100.00%	4.61E+01	90.78%

Number of Results: 1

Quanterra

LABORATORY CONTROL SAMPLE

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02978A / 9717
LAB SAMPLE ID:	D71M812S	MATRIX:	WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
NI-63	2.90E+02		4.5E+00	2.2E+01	3.16E+00	pCi/L	98.69%	3.81E+02	76.10%

Number of Results: 1

Quanterra

LABORATORY CONTROL SAMPLE

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02978A / 9717
LAB SAMPLE ID:	D71M912S	MATRIX:	WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
PU239/40	4.40E+00		7.8E-01	1.1E+00	9.32E-02	pCi/L	91.70%	4.52E+00	97.47%

Number of Results: 1

Quanterra

LABORATORY CONTROL SAMPLE

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02978A / 9717
LAB SAMPLE ID:	D71MC12S	MATRIX:	WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
AM-241	1.87E+01		1.7E+00	3.6E+00	1.05E-01	pCi/L	108.34%	2.28E+01	81.98%

Number of Results: 1

Quanterra

LABORATORY CONTROL SAMPLE

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02978A / 9717
LAB SAMPLE ID:	D71MF12S	MATRIX:	Water

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
CO-60	8.81E+01		1.9E+01	1.9E+01	8.72E+00	pCi/L		7.72E+01	114.07%

Number of Results: 1

Result = IDL When Not Detecte

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL.

Quanterra Analytical Services, Inc

rptChemRadLcs; v3.41

Quanterra

LABORATORY CONTROL SAMPLE

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02978A / 9717
LAB SAMPLE ID:	D71MG12S	MATRIX:	WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
STRONTIUM	6.89E+01		5.9E+00	1.9E+01	3.25E+00	pCi/L	93.90%	6.91E+01	99.75%

Number of Results: 1

Quanterra

MATRIX SPIKE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02978A / 9717
LAB SAMPLE ID:	D6MT51EW	MATRIX:	WATER

ANALYTE	SPIKE RESULT*	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/IDL	REPORT UNIT	SAMPLE RESULT	EXPECTED	RECOVERY
NI-63	1.31E+03		2.0E+01	9.9E+01	1.35E+01	pCi/L	1.67E+01	1.69E+03	77.30%

Number of Results: 1

*Spike Result Corrected For Sample Result

Result = IDL When Not Detecte

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL.

U-27023

Bechtel Hanford Inc. — CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B00-014-02 | Page 1 of 1

Collector R. Fahlberg	**Company Contact** Jason Adler	**Telephone No.** 373-4316	**Project Coordinator** TRENT, SJ
Project Designation 105-F/DR Phase III Below-grade Areas Sampling and Analy	**Sampling Location** 105 DR		**SAF No.** B00-014
Ice Chest No. SML-452	**Field Logbook No.** EL 1424	**COA** R105D2280C	**Method of Shipment** GOV. Vehicle
Shipped To Quanterra Incorporated	**Offsite Property No.** N/A		**Bill of Lading/Air Bill No.** N/A

Price Code 7L — **Data Turnaround** 21 Days — **Air Quality**

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

SNL W02978

Due 1-11-00

SAMPLE ANALYSIS J9L210143

Sample No.	Matrix *	Sample Date	Sample Time	Preservation	HNO3 to pH <2	HNO3 to pH <2								
				Type of Container	P	P								
				No. of Container(s)	1	1								
				Volume	500mL	1000mL								
					ICP Metals - 6010A (Supertrace) [Lead], Mercury - 7470 - (CV)	See item (1) in Special Instructions								
B0X633 D6MT5	Water	12-20-99	1045		X	X								
													TIE TO BOX4NS	

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By	Date/Time	Received By	Date/Time
R Fahlberg / R Fahlberg	1650 12-20-99	R Fahlberg I-C	1550 12-20-99
R Fahlberg I-C	12-21-99 0700	R. Thoren	12-21-99 0700
R. Thoren	12-21-99 0940	[illegible]	12/21/99 9:40

SPECIAL INSTRUCTIONS

** The laboratory will use the target detection limits for "Other" matrix materials on all samples associated with this SAF.

(1) Gamma Spectroscopy(Water) {Cobalt-60}; Gamma Spec - Add-on {Barium-133}; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Americium-241; Carbon-14; Nickel-63

Matrix *
S=Soil
SE=Sediment
SO=Solid
S=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION — Received By — Title — Date/Time

FINAL SAMPLE DISPOSITION — Disposal Method — Disposed By — Date/Time

3 000

BHI-EE-011 (10/99)

Quanterra
2800 George Washington Way
Richland, Washington 99352-1613

509 375-3131 Telephone
509 375-5590 Fax

CERTIFICATE OF ANALYSIS

Bechtel Hanford, Inc.
3350 George Washington Way
Richland, WA 99352

February 8, 2000

Attention: Joan Kessner

SAF Number	:	B00-014
Date SDG Closed	:	December 21, 1999
Number of Samples	:	One (1)
Sample Type	:	Water
SDG Number	:	W02978B
Data Deliverable	:	21-Day / Summary

I. Introduction

On December 16, 1999, one water sample was received at the Quanterra Richland Laboratory (QRL) for radiochemical analysis. Upon receipt, the sample was assigned the following laboratory ID number to correspond with the Bechtel Hanford, Inc. (BHI) specific ID:

QRL ID#	BHI ID#	MATRIX	DATE OF RECEIPT
9D6F7W10	B0X5V0	WATER	12/16/99

II. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information, analytical results and the appropriate associated statistical errors.

The requested analyses were:

Gamma Spectroscopy
Gamma Scan by method RICH-RC-5017
Gas Proportional Counting
Total Strontium by method RICH-RC-5006
Alpha Spectroscopy
Plutonium-238, -239/40 by method RICH-RC-5010
Americium-241 by method RICH-RC-5080
Uranium-234, -235, -238 by method RICH-RC-5079

Liquid Scintillation Counting
Technetium-99 by method RICH-RC-5078
Nickel-63 by method RICH-RC-5069
Carbon-14 by method RICH-RC-5022
Chemical Analyses
Hexavalent Chromium by EPA method 7196

III. Quality Control

The analytical results for each analysis performed under SDG W02978B include a minimum of one Laboratory Control Sample (LCS), one method (reagent) blank, and one duplicate sample analysis. Any exceptions have been noted in the "Comments" section.

QC and sample results are reported in the same units.

IV. Comments

Gamma Spectroscopy
Gamma Scan by method RICH-RC-5017:
The achieved MDAs are based on the best available counting geometry and detector efficiency for the matrix analyzed. The data are accepted for reporting with the MDAs achieved. Except as noted, the LCS, batch blank, sample and sample duplicate (B0X5V0) results are within contractual requirements.

Gas Proportional Counting
Total Strontium by method RICH-RC-5006:
The achieved MDAs do not meet the CRDL for samples B0X5V0 and B0X5V0 duplicate analysis due to insufficient sample volume. The data are accepted for reporting with the MDAs achieved. Except as noted, the LCS, batch blank, sample and sample duplicate (B0X5V0) results are within contractual requirements.

Alpha Spectroscopy
Plutonium-238, -239/40 by method RICH-RC-5010:
The LCS, batch blank, sample and sample duplicate (B0X5V0) results are within contractual requirements.

Americium-241 by method RICH-RC-5080:
The LCS, batch blank, sample and sample duplicate (B0X5V0) results are within contractual requirements.

Uranium-234, -235, -238 by method RICH-RC-5079:
The LCS, batch blank, sample and sample duplicate (B0X5V0) results are within contractual requirements.

Liquid Scintillation Counting
Technetium-99 by method RICH-RC-5078:
The LCS, batch blank, sample, sample duplicate (B0X5V0) and sample matrix spike (B0X5V0) results are within contractual requirements.

Nickel-63 by method RICH-RC-5069:
The achieved MDAs do not meet the CRDL for samples B0X5V0 and B0X5V0 duplicate analysis due to insufficient sample volume. The data are accepted for reporting with the MDAs achieved. Except as noted, the LCS, batch blank, sample, sample duplicate (B0X5V5) and sample matrix spike (B0X5V0) results are within contractual requirements.

Carbon-14 by method RICH-RC-5022:
The LCS, batch blank, sample and sample duplicate (B0X5V0) results are within contractual requirements.

Chemical Analyses
Hexavalent Chromium by EPA method 7196:
The LCS, batch blank, matrix spike, matrix spike duplicate, sample and sample duplicate (B0X5V0) results are within contractual requirements.

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager, or a designee as verified by the following signature.

Reviewed and approved:

Jackie Waddell
Project Manager

Quanterra

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	**SDG: /RPT GRP:**	W02978B/ 9725
LAB SAMPLE ID:	9D6F7W10	**MATRIX:**	WATER
CLIENT ID:	B0X5V0	**DATE RECEIVED:**	12/16/99 12:24:00 PM

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
HEXCHROME	2.00E-03	U	N/A	N/A	2.00E-03	mg/L	N/A	EPA7196
PU-238	3.08E-02	U	1.2E-01	1.2E-01	3.52E-01	pCi/L	94.86%	RICHRC5010
PU239/40	0.00E+00	U	0.0E+00	1.5E-01	1.61E-01	pCi/L	94.86%	RICHRC5010
AM-241	1.14E-01	U	1.6E-01	1.6E-01	1.55E-01	pCi/L	97.69%	RICHRC5072
U-234	3.62E-02	U	2.1E-01	2.1E-01	6.47E-01	pCi/L	54.53%	RICHRC5067
U-235	1.37E-01	U	2.9E-01	2.9E-01	6.47E-01	pCi/L	54.53%	RICHRC5067
U-238	-1.65E-01	U	2.2E-01	2.2E-01	1.03E+00	pCi/L	54.53%	RICHRC5067
BA-133	-1.14E+00	U	4.6E+00	4.6E+00	8.26E+00	pCi/L		RICHRC5017
CO-60	-6.55E-01	U	4.6E+00	4.6E+00	8.89E+00	pCi/L		RICHRC5017
STRONTIUM	-1.60E-01	U	1.4E+00	1.4E+00	3.48E+00	pCi/L	90.40%	RICHRC5006
C-14	-5.72E+00	U	4.2E-01	2.0E+01	3.23E+01	pCi/L	100.00%	RICHRC5022
NI-63	1.45E+01	U	8.3E-01	2.7E+01	4.13E+01	pCi/L	101.24%	RICHRC5069
TC-99	-5.90E-01	U	3.1E-02	1.2E+01	1.21E+01	pCi/L	100.00%	RICHRC5078

Number of Results: 13

Quanterra

DUPLICATE RESULTS

LAB NAME:	QUANTERRA, Richland	**SDG: /RPT GRP:**	W02978B / 9725
LAB SAMPLE ID:	D6F7W1ER	**MATRIX:**	WATER
CLIENT ID:	B0X5V0	**DATE RECEIVED:**	12/16/99 12:24:00 P
ORIG LAB SAMPLE ID:	9D6F7W10		

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
HEXCHROME	2.00E-03		N/A	N/A	2.00E-03	mg/L	N/A	EPA7196	2.00E-03	0.00%

Number of Results: 1

Result = IDL When Not Detecte

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL.

Quanterra

DUPLICATE RESULTS

LAB NAME:	QUANTERRA, Richland	**SDG: /RPT GRP:**	W02978B / 9725
LAB SAMPLE ID:	D6F7W1FR	**MATRIX:**	WATER
CLIENT ID:	B0X5V0 DUP	**DATE RECEIVED:**	12/16/99 12:24:00 P
ORIG LAB SAMPLE ID:	9D6F7W10		

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
NI-63	7.77E+00	U	5.0E-01	3.0E+01	5.72E+01	pCi/L	92.08%	RICHRC5069	1.45E+01	60.39%

Number of Results: 1

Result = IDL When Not Detecte

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL.

Quanterra

DUPLICATE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02978B / 9725
LAB SAMPLE ID:	D6F7W1HR	MATRIX:	WATER
CLIENT ID:	B0X5V0 DUP	DATE RECEIVED:	12/16/99 12:24:00 P
ORIG LAB SAMPLE ID:	9D6F7W10		

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
TC-99	5.73E+00	U	3.0E-01	1.2E+01	1.21E+01	pCi/L	100.00%	RICHRC5078	-5.90E-01	245.84%

Number of Results: 1

Result = IDL When Not Detecte

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL.

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DUPLICATE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02978B / 9725
LAB SAMPLE ID:	D6F7W1JR	MATRIX:	WATER
CLIENT ID:	B0X5V0 DUP	DATE RECEIVED:	12/16/99 12:24:00 P
ORIG LAB SAMPLE ID:	9D6F7W10		

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
PU-238	0.00E+00	U	0.0E+00	1.5E-01	1.63E-01	pCi/L	93.08%	RICHRC5010	3.08E-02	200.00%
PU239/40	0.00E+00	U	0.0E+00	1.5E-01	1.63E-01	pCi/L	93.08%	RICHRC5010	0.00E+00	0.00%

Number of Results: 2

Result = IDL When Not Detecte

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL.

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DUPLICATE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02978B / 9725
LAB SAMPLE ID:	D6F7W1KR	MATRIX:	WATER
CLIENT ID:	B0X5V0 DUP	DATE RECEIVED:	12/16/99 12:24:00 P
ORIG LAB SAMPLE ID:	9D6F7W10		

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
AM-241	-4.14E-03	U	8.3E-03	8.3E-03	2.08E-01	pCi/L	109.39%	RICHRC5072	1.14E-01	215.07%

Number of Results: 1

Result = IDL When Not Detecte

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL.

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DUPLICATE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02978B / 9725
LAB SAMPLE ID:	D6F7W1LR	MATRIX:	WATER
CLIENT ID:	B0X5V0 DUP	DATE RECEIVED:	12/16/99 12:24:00 P
ORIG LAB SAMPLE ID:	9D6F7W10		

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
STRONTIUM	5.95E-01	U	1.6E+00	1.6E+00	3.60E+00	pCi/L	93.30%	RICHRC5006	-1.60E-01	347.38%

Number of Results: 1

Result = IDL When Not Detecte

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL.

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DUPLICATE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02978B / 9725
LAB SAMPLE ID:	D6F7W1MR	MATRIX:	WATER
CLIENT ID:	B0X5V0 DUP	DATE RECEIVED:	12/16/99 12:24:00 P
ORIG LAB SAMPLE ID:	9D6F7W10		

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
C-14	9.83E+00	U	8.1E-01	2.5E+01	3.25E+01	pCi/L	100.00%	RICHRC5022	-5.72E+00	756.20%

Number of Results: 1

Result = IDL When Not Detecte

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL.

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DUPLICATE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02978B / 9725
LAB SAMPLE ID:	D6F7W1NR	MATRIX:	Water
CLIENT ID:	B0X5V0 DUP	DATE RECEIVED:	12/16/99 12:24:00 P
ORIG LAB SAMPLE ID:	9D6F7W10		

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
BA-133	-2.31E+00	U	5.5E+00	5.5E+00	9.21E+00	pCi/L		RICHRC5017	-1.14E+00	67.72%
CO-60	1.32E+00	U	5.4E+00	5.4E+00	1.07E+01	pCi/L		RICHRC5017	-6.55E-01	594.75%

Number of Results: 2

Result = IDL When Not Detecte

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL.

Quanterra

DUPLICATE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02978B / 9725
LAB SAMPLE ID:	D6F7W1PR	MATRIX:	WATER
CLIENT ID:	B0X5V0 DUP	DATE RECEIVED:	12/16/99 12:24:00 P
ORIG LAB SAMPLE ID:	9D6F7W10		

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
U-234	8.68E-02	U	1.7E-01	1.7E-01	3.73E-01	pCi/L	92.65%	RICHRC5067	3.62E-02	82.36%
U-235	5.55E-02	U	1.2E-01	1.2E-01	2.43E-01	pCi/L	92.65%	RICHRC5067	1.37E-01	84.58%
U-238	-2.90E-02	U	2.4E-02	2.4E-02	3.58E-01	pCi/L	92.65%	RICHRC5067	-1.65E-01	140.32%

Number of Results: 3

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BLANK RESULTS

LAB NAME:	QUANTERRA, Richland	SDG /RPT GRP:	W02978B / 9725
LAB SAMPLE ID:	D6HGE11B	MATRIX:	WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
HEXCHROME	0.00E+00	U	N/A	N/A	2.00E-03	mg/L	N/A	EPA7196

Number of Results: 1

Result = IDL When Not Detected

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL

Quanterra

BLANK RESULTS

LAB NAME:	QUANTERRA, Richland	SDG /RPT GRP:	W02978B / 9725
LAB SAMPLE ID:	D6M3D11X	MATRIX:	WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
C-14	-2.64E+00	U	2.0E-01	5.0E+00	8.07E+00	pCi/L	100.00%	RICHRC5022

Number of Results: 1

Result = IDL When Not Detected

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL

Quanterra

BLANK RESULTS

LAB NAME:	QUANTERRA, Richland	**SDG /RPT GRP:**	W02978B / 9725
LAB SAMPLE ID:	D6M3J11B	**MATRIX:**	WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
NI-63	2.45E+00	U	1.5E-01	2.3E+00	3.91E+00	pCi/L	95.11%	RICHRC5069

Number of Results: 1

Result = IDL When Not Detected

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL

Quanterra

BLANK RESULTS

LAB NAME: QUANTERRA, Richland SDG /RPT GRP: W02978B / 9725

LAB SAMPLE ID: D6M4611B MATRIX: WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
TC-99	3.23E+00	U	1.7E-01	1.2E+01	1.20E+01	pCi/L	100.00%	RICHRC5078

Number of Results: 1

Result = IDL When Not Detected

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL

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BLANK RESULTS

LAB NAME: QUANTERRA, Richland SDG /RPT GRP: W02978B / 9725

LAB SAMPLE ID: D6M4C11B MATRIX: WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
PU-238	-7.99E-03	U	1.1E-02	1.1E-02	2.28E-01	pCi/L	83.12%	RICHRC5010
PU239/40	-3.99E-03	U	8.0E-03	8.0E-03	2.01E-01	pCi/L	83.12%	RICHRC5010

Number of Results: 2

Result = IDL When Not Detected

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL

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BLANK RESULTS

LAB NAME:	QUANTERRA, Richland	SDG /RPT GRP:	W02978B / 9725
LAB SAMPLE ID:	D6M4E11X	MATRIX:	WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
U-234	9.70E-02	U	1.4E-01	1.4E-01	2.03E-01	pCi/L	85.67%	RICHRC5067
U-235	1.35E-01	U	1.8E-01	1.8E-01	2.70E-01	pCi/L	85.67%	RICHRC5067
U-238	8.89E-02	U	1.4E-01	1.4E-01	2.52E-01	pCi/L	85.67%	RICHRC5067

Number of Results: 3

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BLANK RESULTS

LAB NAME:	QUANTERRA, Richland	SDG /RPT GRP:	W02978B / 9725
LAB SAMPLE ID:	D6M4H11B	MATRIX:	WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
AM-241	4.47E-02	U	8.9E-02	9.0E-02	1.21E-01	pCi/L	91.93%	RICHRC5072

Number of Results: 1

Result = IDL When Not Detected

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL

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BLANK RESULTS

LAB NAME: QUANTERRA, Richland SDG /RPT GRP: W02978B / 9725

LAB SAMPLE ID: D6M4J11X MATRIX: Water

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
BA-133	-4.38E+00	U	5.0E+00	5.0E+00	8.16E+00	pCi/L		RICHRC5017
CO-60	1.73E+00	U	4.6E+00	4.6E+00	9.86E+00	pCi/L		RICHRC5017

Number of Results: 2

Result = IDL When Not Detected

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL

Quanterra

BLANK RESULTS

LAB NAME:	QUANTERRA, Richland	**SDG /RPT GRP:**	W02978B / 9725
LAB SAMPLE ID:	D6M4K11X	**MATRIX:**	WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
STRONTIUM	-1.58E-01	U	2.6E-01	2.7E-01	6.88E-01	pCi/L	94.50%	RICHRC5006

Number of Results: 1

Result = IDL When Not Detected

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL

Quanterra

LABORATORY CONTROL SAMPLE

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02978B / 9725
LAB SAMPLE ID:	D6HGE12S	MATRIX:	WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
HEXCHROME	5.00E-01		N/A	N/A	2.00E-03	mg/L	N/A	5.00E-01	100.00%

Number of Results: 1

Result = IDL When Not Detecte

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL.

Quanterra

LABORATORY CONTROL SAMPLE

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02978B / 9725
LAB SAMPLE ID:	D6M3D12S	MATRIX:	WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
C-14	4.17E+01	J	2.2E+00	7.3E+00	8.06E+00	pCi/L	100.00%	4.70E+01	88.76%

Number of Results: 1

Result = IDL When Not Detecte

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL.

Quanterra

LABORATORY CONTROL SAMPLE

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02978B / 9725
LAB SAMPLE ID:	D6M3J12S	MATRIX:	WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
NI-63	2.70E+02		5.2E+00	2.1E+01	4.68E+00	pCi/L	85.30%	3.80E+02	71.01%

Number of Results: 1

Result = IDL When Not Detecte

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL.

Quanterra

LABORATORY CONTROL SAMPLE

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02978B / 9725
LAB SAMPLE ID:	D6M4612S	MATRIX:	WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
TC-99	5.12E+02		1.1E+01	5.4E+01	1.21E+01	pCi/L	100.00%	5.42E+02	94.48%

Number of Results: 1

Quanterra

LABORATORY CONTROL SAMPLE

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02978B / 9725
LAB SAMPLE ID:	D6M4C12S	MATRIX:	WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
PU239/40	4.23E+00		8.4E-01	1.1E+00	1.88E-01	pCi/L	99.95%	4.63E+00	91.34%

Number of Results: 1

Result = IDL When Not Detecte

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL.

Quanterra

LABORATORY CONTROL SAMPLE

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02978B / 9725
LAB SAMPLE ID:	D6M4E12M	MATRIX:	WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
U-234	9.39E+00		1.3E+00	2.1E+00	3.09E-01	pCi/L	100.23%	8.70E+00	107.95%
U-235	4.63E-01		2.9E-01	3.0E-01	2.47E-01	pCi/L	100.23%	3.97E-01	116.58%
U-238	9.19E+00		1.3E+00	2.0E+00	2.59E-01	pCi/L	100.23%	9.11E+00	100.87%

Number of Results: 3

Quanterra

LABORATORY CONTROL SAMPLE

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02978B / 9725
LAB SAMPLE ID:	D6M4H12S	MATRIX:	WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
AM-241	1.94E+01		1.8E+00	3.8E+00	1.69E-01	pCi/L	99.77%	2.28E+01	85.09%

Number of Results: 1

Quanterra

LABORATORY CONTROL SAMPLE

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02978B / 9725
LAB SAMPLE ID:	D6M4J12M	MATRIX:	Water

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
CO-60	6.98E+01		1.6E+01	1.6E+01	1.06E+01	pCi/L		7.69E+01	90.70%

Number of Results: 1

Result = IDL When Not Detecte

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL.

Quanterra Analytical Services, Inc

rptChemRadLcs; v3.41

Quanterra

LABORATORY CONTROL SAMPLE

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02978B / 9725
LAB SAMPLE ID:	D6M4K12M	MATRIX:	WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
STRONTIUM	1.13E+01		9.9E-01	3.4E+00	6.86E-01	pCi/L	91.10%	1.37E+01	82.30%

Number of Results: 1

Result = IDL When Not Detecte

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL.

Quanterra Analytical Services, Inc

rptChemRadLcs; v3.41

Quanterra

MATRIX SPIKE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02978B / 9725
LAB SAMPLE ID:	D6F7W1CW	MATRIX:	WATER

ANALYTE	SPIKE RESULT*	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/IDL	REPORT UNIT	SAMPLE RESULT	EXPECTED	RECOVERY
HEXCHROME	5.26E-01		N/A	N/A	2.00E-03	mg/L	2.00E-03	5.26E-01	100.00%

Number of Results: 1

*Spike Result Corrected For Sample Result

Result = IDL When Not Detecte

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL.

Quanterra

MATRIX SPIKE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02978B / 9725
LAB SAMPLE ID:	D6F7W1DW	MATRIX:	WATER

ANALYTE	SPIKE RESULT*	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/IDL	REPORT UNIT	SAMPLE RESULT	EXPECTED	RECOVERY
HEXCHROME	5.28E-01		N/A	N/A	2.00E-03	mg/L	2.00E-03	5.26E-01	100.38%

Number of Results: 1

*Spike Result Corrected For Sample Result

Result = IDL When Not Detecte

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL.

Quanterra

MATRIX SPIKE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02978B / 9725
LAB SAMPLE ID:	D6F7W1GW	MATRIX:	WATER

ANALYTE	SPIKE RESULT*	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/IDL	REPORT UNIT	SAMPLE RESULT	EXPECTED	RECOVERY
TC-99	3.15E+03		2.9E+01	2.8E+02	1.21E+01	pCi/L	-5.90E-01	3.61E+03	87.15%

Number of Results: 1

*Spike Result Corrected For Sample Result

Result = IDL When Not Detecte

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL.

Quanterra

MATRIX SPIKE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02978B / 9725
LAB SAMPLE ID:	D6F7W1QW	MATRIX:	WATER

ANALYTE	SPIKE RESULT*	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/IDL	REPORT UNIT	SAMPLE RESULT	EXPECTED	RECOVERY
NI-63	4.00E+03		6.1E+01	3.0E+02	4.28E+01	pCi/L	1.45E+01	5.05E+03	79.24%

Number of Results: 1

*Spike Result Corrected For Sample Result

Result = IDL When Not Detecte

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL.

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B00-014-01	Page 1 of 1
Collector Fahlberg/Nielson	Company Contact J Adler	Telephone No. 373-4316	Project Coordinator TRENT, SJ	Price Code 7L Air Quality [ ]	Data Turnaround 21 Days
Project Designation 105-F/DR Phase III Below-grade Areas Sampling and Analy	Sampling Location 105 DR		SAF No. B00-014		
Ice Chest No. ERC 99.025	Field Logbook No. EL 1424	COA R105D2280C	Method of Shipment		
Shipped To Quanterra Incorporated	Offsite Property No.		Bill of Lading/Air Bill No.		

POSSIBLE SAMPLE HAZARDS/REMARKS

Q27023

Special Handling and/or Storage

SAMPLE ANALYSIS

SDGW02978 J9L160251

Preservation	None	Cool 4C	HNO3 to pH <2	HNO3 to pH <2	Cooled to 4C	HCl to pH <2	HNO3 to pH <2			
Type of Container	P	P	P	P	aG	P	P			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	20mL	500mL	500mL	500mL	1000mL	1000mL	1000mL			
	Activity Scan	7196_CR6 Hexavalent Chromium (1)	ICP Metals - 6010A (Supervace) {Lead}, Mercury - 7470 - (CV)	Isotopic Uranium	PCBs - 8082	Technetium-99	See item (1) in Special Instructions			
		✓	✓	✓	X	✓				
Sample No.	Matrix *	Sample Date	Sample Time							
B0X5V0	Water	12.16.99	1105	X	X	X	X	X	X	X		DGFTW

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By	Date/Time	Received By	Date/Time
B.Fahlberg/R.Fahlberg	12.16.99 1145	R. Thoren	12.16.99/1145
Relinquished By	Date/Time	Received By	Date/Time
R. Thoren	12.16.99/1224	[signature]	12-16-99 1224
Relinquished By	Date/Time	Received By	Date/Time
			2100cpm
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

** The laboratory will use the target detection limits for "Other" matrix materials on all samples associated with this SAF.

(1) Gamma Spectroscopy(Water) {Cobalt-60}; Gamma Spec - Add-on {Barium-133}; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Americium-241; Carbon-14; Nickel-63

Matrix *
S=Soil
SE=Sediment
SO=Solid
SL=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

0050

BHI-EE-011 (10/99)